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Media Services Information

NASA Launch Coverage:

The TDRS-H launch will be telecast live on NASA-TV beginning at about 7 a.m. EDT. NASA TV coordinates are GE-2, transponder 9C at 85 degrees west longitude, with a frequency of 3880 Mhz and audio of 6.8 Mhz.

A webcast of the launch also can be viewed on NASA's Kennedy Space Center home page at: http://www.ksc.nasa.gov

Pre-launch Press Briefing:

A pre-launch press briefing for interested media is scheduled for June 28 (L-1) from 11 a.m. to Noon at the KSC Press Site, Launch Complex 39. The briefing will be carried live on NASA-TV.

News Center/Status Reports:

The KSC News Center (321-867-2468) will open beginning June 27 (L-2) at 8 a.m. Recorded launch status will be available beginning
that day by dialing either 321-867-2525 or 301-286-NEWS.

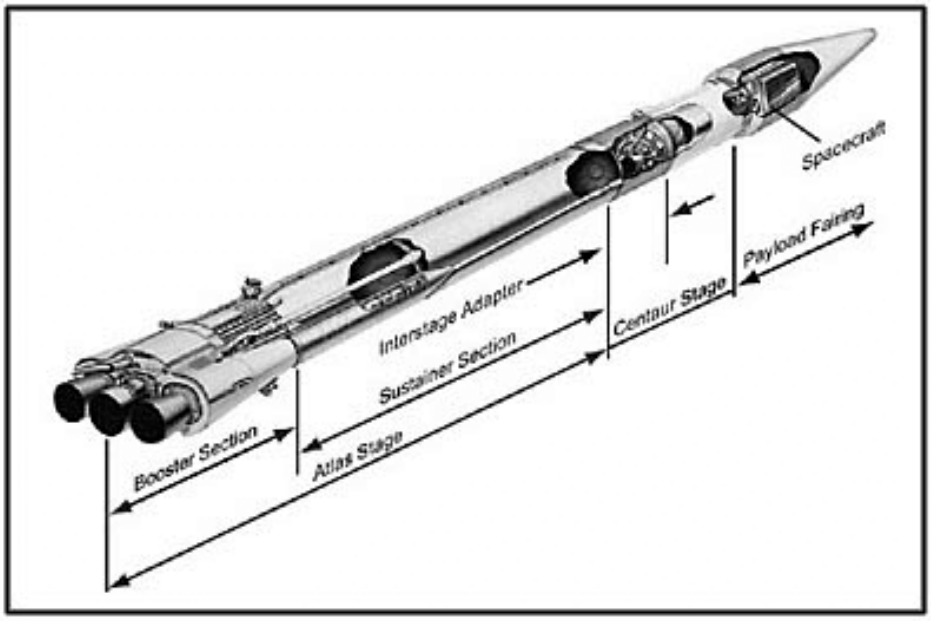
Launch Media Credentials:

Media seeking launch accreditation should fax their request by close of business two days prior to launch to 321-867-2692. Requests
must be on the letterhead of the news organization and specify the name of the editor making the assignment to cover the launch.

Internet Information:

Detailed information about NASA's TDRS-H, -I, and -J spacecraft and mission is available on the Web at: http://tdrs.gsfc.nasa.gov/Tdrsproject/

Atlas IIA Launch Vehicle Diagram



(Drawing courtesy of Lockheed Martin Missiles and Space.)

Exploded view of the Lockheed Martin Atlas IIA expendable launch vehicle, shown with the TDRS-H spacecraft onboard.

TDRS-H Quick Facts

This mission represented the first of three newly designed TDRS satellites that will help replenish the existing on-orbit TDRS fleet. TDRS-H consists of a spacecraft "bus" or platform (modified Hughes 601 model spacecraft) and payload, which was developed by Hughes Space and Communications of El Segundo, Calif. under a contract with NASA.

TDRS-H will augment the system’s existing S-band and Ku-band frequencies by adding Ka-band capability, allowing for higher data rates at a more favorable band, less susceptible to interference from the increasingly busy radio

environment. To support this increased capability, Raytheon of Denver, Colo., a subcontractor to Hughes, upgraded the White Sands Complex (WSC) ground stations located in White Sands, New Mexico.

The new satellite also includes a more capable "Multiple-Access" system, which can support five user spacecraft simultaneously at higher data rates than the existing TDRS fleet.

Spacecraft

Dimensions: 68 feet (21 meters) long with solar arrays deployed, 43 feet (13 meters) wide with antennas deployed.

Weight: 7,011 at lift-off (3,180 kilograms); 3,918 pounds (1,777 kilograms) estimated beginning of life on-orbit.

Payload Services: S-band single access (SSA), S-band multiple access (MA),

Ku-band single access (KuSA) and Ka-band single access (KaSA)

Power: Silicon solar cell arrays that generate 2,300 watts; nickel-hydrogen batteries supply payload power during eclipses

Payload Data Return Rate: Multiple Access: 3 megabits per second (Mbps); S-Band Single Acces: 6 Mbps; Ku-Band Single Access: 300 Mbps; and Ka-Band Single Access: 300 Mbps, with up to 800 Mbps additional capability.

Mission Lifetime: 11 years, with expendables for 15 years.

Intended Orbit: Geosynchronous at 150 degrees West longitude for on-orbit acceptance testing. Upon completion of testing, TDRS-8 will move to its operational slot at 171 West longitude, sharing an assigned position with TDRS seven.

Expendable Launch Vehicle: Lockheed Martin Atlas IIA rocket.

Launch Site: Cape Canaveral Air Force Station, Fla., Launch Complex 36.

Launch Date and Time: June 29, 2000 at 8:38a.m. EDT (40-minute window)

Spacecraft Separation: Launch + 30 minutes.

First Acquisition of TDRS-H Signal: Occurs 44 minutes after launch via the Air Force Satellite Control Facility located on the island of Diego Garcia, Indian Ocean.

Cost: The TDRS-H spacecraft cost $395 million. The amount includes spacecraft development, the satellite and its payload, modifications to the White Sand Complex and the launch vehicle. It does not include operational costs.

Mission Oversight: Goddard's Space Network Project Office is responsible for on-orbit acceptance and post acceptance testing of the TDRS-H spacecraft, along with managing spacecraft operations during its mission lifetime.

TDRS System Background: The Tracking and Data Relay Satellite System (TDRSS) is a communication signal relay system which provides tracking and data acquisition services between low earth orbiting spacecraft and NASA/customer control and/or data processing facilities.

The TDRSS space segment consists of six on-orbit tracking and data relay satellites (TDRS 1 through 6). Three of the TDRS are available for operational support anytime and are located at 41, 174 and 275 degrees West longitude. The remaining TDRS provide
ready backup in the event of a failure to an operational spacecraft and, in some specialized cases, serve as resources for target of opportunity activities.

The TDRSS ground segment is located near Las Cruces, New Mexico and consists of two functionally identical ground terminals named Cacique and Danzante, known collectively as the White Sands Complex. Customer forward data is uplinked from the ground
segment to the TDRS and from the TDRS to the customer spacecraft. Customer return data is downlinked from the customer spacecraft via the TDRS to the ground segment and then on to the customer designated data collection location.

The Guam Remote Ground Terminal (GRGT) replaced the GRO Remote Terminal System (GRTS). GRTS, located and operated from Canberra Australia, closed the TDRSS Zone of Exclusion for the Compton Gamma Ray Observatory and the Space Shuttle. Implementation of the GRGT in July 1998 extended that capability to all TDRSS customers, making it possible for TDRSS to provide 100% coverage.

Additional information about the TDRS System is available at:

http://nmsp.gsfc.nasa.gov/tdrss/oview.html

Key TDRS System Milestones:

July 1981 Original White Sands Ground Terminal (WSGT) completed.

April 1983 The first TDRS (TDRS-1) is launched aboard the Space Shuttle Challenger. A malfunction occurred during the inertial upper stage (IUS) solid rocket booster burn and the satellite entered an unusable elliptical orbit. However, the spacecraft's thrusters corrected its orbit during a two-month period.

Aug. 1983 The first TDRS customer support occurs with the Landsat-4 satellite. Interim operations begin with Landsat and other customers. The first Space Shuttle (STS-8) test communications support occurs through TDRS-1.

Jan. 1986 TDRS-2 is destroyed during the Space Shuttle Challenger accident.

Sep. 1988 TDRS-3 is launched aboard Space Shuttle Discovery.

Nov. 1988 Dual TDRS (via TDRS-1 and TDRS-3) support begins.

Mar 1989 TDRS-4 is launched aboard Space Shuttle Discovery.

Aug. 1991 TDRS-5 is launched aboard Space Shuttle Atlantis.

Jan. 1993 TDRS-6 is launched aboard Space Shuttle Endeavour.

Dec. 1993 Compton Gamma Ray Observatory on-board tape recorder failure (3/92) necessitates closure of TDRS zone of exclusion to minimize science data loss. Temporary TDRSS capability implemented at Canberra, Australia.

April 1994 Second Ground Terminal (STGT) is complete.

Mar 1995 WSGT is decommissioned and upgrades (WSGTU) begin.

July 1995 TDRS-7 (last one built by TRW) launched aboard Space Shuttle Discovery.

Feb. 1996 WSGT Upgrade is completed - ahead of schedule and under budget.

Sept. 1996 Guam Remote Ground Terminal (GRGT) implementation phase II efforts begin.

June 1998 GRGT completed - ahead of schedule and under budget.

July 1998 GRGT declared operational, closing the TDRS zone of exclusion.

Jan. 1999 South Pole TDRSS Relay implemented, allowing National Science Foundation personnel to receive and transmit data from
the South Pole. TDRSS service assists in resolving a medical emergency at the Pole.

Status & Position of Each TDRS:

TDRS-1: NASA removed TDRS-1 from its 49 degrees West longitude after years of operation due to its degraded status. It now provides part time coverage of the Antarctic region in support of research efforts conducted by the National Science Foundation.

TDRS-2: Lost during the Space Shuttle Challenger accident.

TDRS-3: Still operating at 275 degrees West longitude.

TDRS-4: Still operating at 41 degrees West longitude.

TDRS-5: Still operating at 174 degrees West longitude.

TDRS-6: Still operating at 47 degrees West longitude.

TDRS-7: Still operating at 171 degrees West longitude.

Satellite Capabilities

TDRS-H, -I and –J retain and augment two large antennas, which move smoothly to track user satellites orbiting below, providing high data rate communications. A summary of services provided by the new trio follows:

S-Band Multiple Access: The S-band phased array antenna can support five lower data rate user satellites in the space-to-Earth direction (for returning data

collected in space) and one user each time in the Earth-to-space direction (used to command and control
user satellites).

S-Band Single Access: Provided by the spacecraft's two 15-foot diameter antennas to enable two-way communication during user satellite data dumps, or full-time high-rate services to high-priority users such as the Space Shuttle and planned Space Station.

Ku-Band Single Access: The same two 15-foot antennas also operate at a higher bandwidth, which will provide the future International Space Station with high-resolution digital television reception. The antennas also will be used to dump large volumes of data at rates up to 300 megabits per second (Mgps) – roughly equal to moving the contents of 26 full computers disks every second.

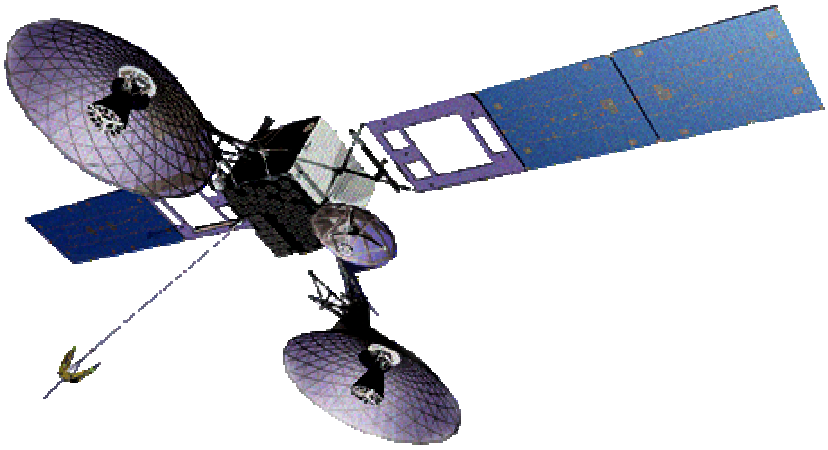
Ka-Band Single Access: A new tunable, wide band high frequency service offered by TDRS-H, -I, and –J, which provides tunable, wide band channels that permit up to 800 Mbps needed for future missions.

Satellite Navigation: In addition to equipment located at the White Sands, N.M. ground terminal, the system will continue to provide user navigational data necessary to locate the orbit and position of NASA user satellites.

Innovative Design Features

TDRS-H, -I, and –J will use a pair of 15-foot diameter reflectors made of a flexible graphite mesh that folds easily, conforming to the limited space inside the launch vehicle. Once on orbit, the antennas will spring back to their original configuration. Mechanical adjustments can then be performed, which tune each antenna into a precise shape.

Spacecraft Line Drawing



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